

CLAIMS

1. A data processing apparatus for scrambling data which are under being transferred, comprising:

an ID storing section which stores an ID information relating to a sector which is a scrambling block unit of data under being transferred, which ID information is set by a central processing unit;

a sector counter section which counts the number of the sectors in the data under being transferred;

an operation section which adds the ID information from the ID storing section and the sector number information from the sector counter section; wherein

the data under being transferred being scrambled using the addition result which is outputted from the operation section.

2. A data processing apparatus for de-scrambling data which are under being transferred, comprising:

an ID storing section which stores an ID information relating to a sector which is a scrambling block unit of data under being transferred, which ID information is set by a central processing unit;

a sector counter section which counts the number of the sectors in the data under being transferred;

an operation section which adds the ID information from

the ID storing section and the sector number information from the sector counter section; wherein

the scrambled data under being transferred being de-scrambled using the addition result which is outputted from the operation section.

3. The data processing apparatus as defined in claim 1 or 2, further comprising:

a scramble seed value table conversion section which converts the addition result which is inputted from the operation section into a scrambling seed value;

a scramble filter which, making a period during which data of a predetermined length is transferred one cycle, produces a next cycle scramble seed value from the present cycle scramble seed value;

a selector which selects the scramble seed value which is outputted from the scramble seed value table conversion section when the data under being transferred is a top of a sector and selects the scramble seed value which is outputted from the scramble filter section otherwise, to output the selected result to the scramble filter; wherein

the data under being transferred being scrambled or the scrambled data under being transferred being de-scrambled using the scramble seed value which is outputted from the selector.

4. The data processing apparatus as defined in claim 3,

wherein:

    said scramble filter section which includes at least two scrambling filters, selects a scrambling filter in accordance with the data length of the data to be transferred, to produce a next cycle scrambling seed value from the present cycle scrambling seed value.

5. A data processing apparatus for scrambling data which are under being transferred, comprising:

    an ID storing section which stores an ID information relating to a sector which is a scrambling block unit of data under being transferred, which ID information is set by a central processing unit;

    a sector counter section which counts the number of the sectors in the data under being transferred;

    an operation section which adds the ID information from the ID storing section and the sector number information from the sector counter section;

    a scramble seed value table conversion section which converts the addition result which is inputted from the operation section into a scrambling seed value;

    a scramble filter which, making a period during which data of a predetermined length is transferred one cycle, produces a next cycle scramble seed value from the present cycle scramble seed value;

    a jumping processing scramble filter which receives the

addition result of the operation section and the address information of the data under being transferred, produces a scramble seed value at the destination using the addition result, providing with a case where a jumping in which a part of the data under being transferred is failed, to hold the same value, and outputs a scramble seed value corresponding to the data address at the destination when the jumping processing has occurred;

a first selector which selects the scramble seed value which is outputted from the jumping processing scrambling filter when the jumping processing has occurred, and selects the scramble seed value which is outputted from the scrambling filter otherwise, to output the selected result; and

a second selector which selects the scramble seed value which is outputted from the scramble seed value table conversion section when the data to be transferred is data at a top of a sector and selects the scramble seed value which is outputted from the first selector otherwise, to output the selected result to the scramble filter; wherein

the data under being transferred being scrambled using the scramble seed value which is outputted from the second selector.

6. A data processing apparatus for de-scrambling scrambled data which are under being transferred, comprising:

an ID storing section which stores an ID information

relating to a sector which is a scrambling block unit of data under being transferred, which ID information is set by a central processing unit;

a sector counter section which counts the number of the sectors in the data under being transferred;

an operation section which adds the ID information from the ID storing section and the sector number information from the sector counter section;

a scramble seed value table conversion section which converts the addition result which is inputted from the operation section into a scrambling seed value;

a scramble filter which, making a period during which data of a predetermined length is transferred one cycle, produces a next cycle scramble seed value from the present cycle scramble seed value;

a jumping processing scramble filter which receives the addition result of the operation section and the address information of the data under being transferred, produces a scramble seed value at the destination using the addition result, providing with a case where a jumping in which a part of the data under being transferred is failed, to hold the same value, and outputs a scramble seed value corresponding to the data address at the destination when the jumping processing has occurred;

a first selector which selects the scrambling seed value

which is outputted from the jumping processing scrambling filter when the jumping processing has occurred, and selects the scramble seed value which is outputted from the scrambling filter otherwise, to output the selected result; and

a second selector which selects the scrambling seed value which is outputted from the scramble seed value table conversion section when the data under being transferred is a top of a sector, and selects the scramble seed value which is outputted from the first selector otherwise, to output the selected result to the scramble filter; wherein

the scrambled data under being transferred being de-scrambled using the scramble seed value which is outputted from the second selector.

7. The data processing apparatus as defined in claim 5 or 6, wherein:

said scramble filter section which includes at least two scrambling filters, selects a scrambling filter in accordance with the data length of the data to be transferred, to produce a next cycle scrambling seed value from the present cycle scrambling seed value.

8. The data processing apparatus as defined in claim 5 or 6, wherein:

said scramble filter section which includes at least two scrambling filters, selects a scrambling filter in accordance with the jumping destination of the data to be transferred,

to produce the scrambling seed value.